2SC4926

Silicon NPN Epitaxial

REJ03G0735-0300
(Previous ADE-208-1128A)
Rev.3.00
Aug.10.2005

Application

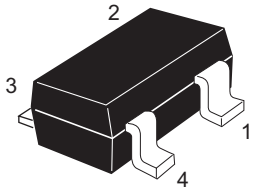
VHF / UHF wide band amplifier

Features

- High gain bandwidth product
  f_T = 11 GHz Typ
- High gain, low noise figure
  PG = 16.5 dB Typ, NF = 1.1 dB Typ at f = 900 MHz

Outline

RENESAS Package code: PLSP0004ZA-A
(Package name: MPAK-4)



1. Collector
2. Emitter
3. Base
4. Emitter

Note: Marking is “YD–”.

Attention: This is electrostatic sensitive device.

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	15	V
Collector to emitter voltage	V_{CEO}	8	V
Emitter to base voltage	V_{EBO}	1.5	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	150	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

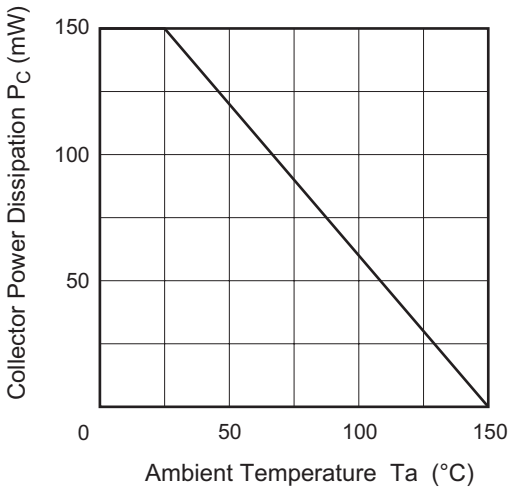
Electrical Characteristics

(Ta = 25°C)

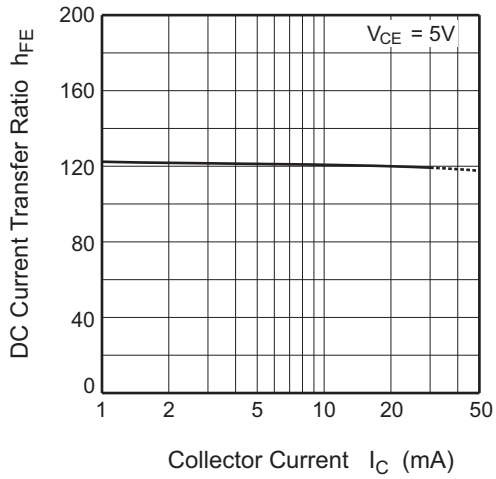
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	15	—	—	V	I_C = 10 µA, I_E = 0
Collector cutoff current	I_{CBO}	—	—	10	µA	V_{CB} = 12 V, I_E = 0
	I_{CEO}	—	—	1	mA	V_{CE} = 8 V, R_{BE} = ∞
Emitter cutoff current	I_{EBO}	—	—	10	µA	V_{EB} = 1.5 V, I_C = 0
DC current transfer ratio	h_{FE}	50	120	250		V_{CE} = 5 V, I_C = 20 mA
Collector output capacitance	Cob	—	0.6	1.1	pF	V_{CB} = 5 V, I_E = 0, f = 1 MHz
Gain bandwidth product	f_T	8.0	11.0	—	GHz	V_{CE} = 5 V, I_C = 20 mA
S_{21} Parameter	$\|S_{21}\|^2$	—	16	—	dB	V_{CE} = 5 V, I_C = 20 mA, f = 1000 MHz
Power gain	PG	13.5	16.5	—	dB	V_{CE} = 5 V, I_C = 20 mA, f = 900 MHz
Noise figure	NF	—	1.1	2.0	dB	V_{CE} = 5 V, I_C = 5 mA, f = 900 MHz

Main Characteristics

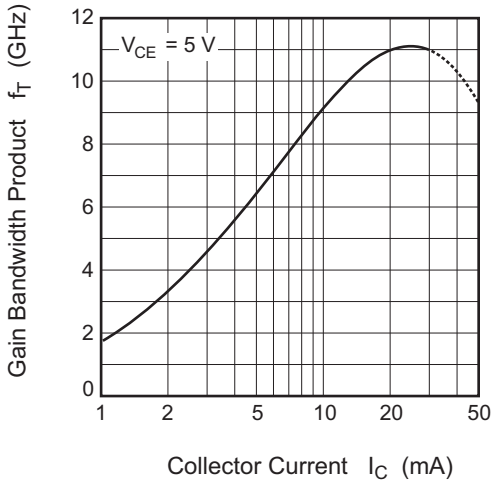
Maximum Collector Dissipation Curve



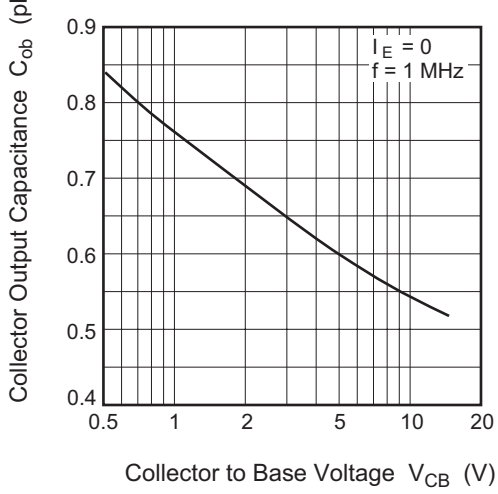
DC Current Transfer Ratio vs. Collector Current



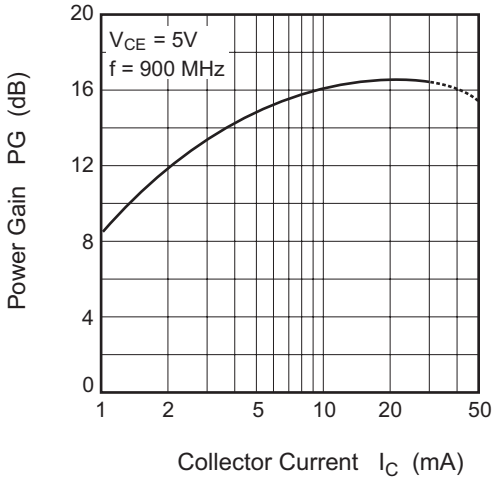
Gain Bandwidth Product vs. Collector Current



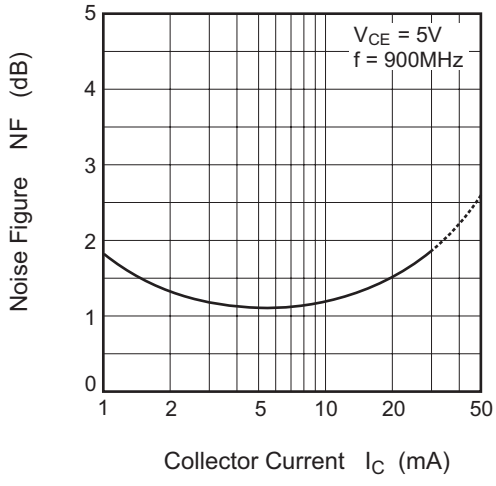
Collector Output Capacitance vs. Collector to Base Voltage



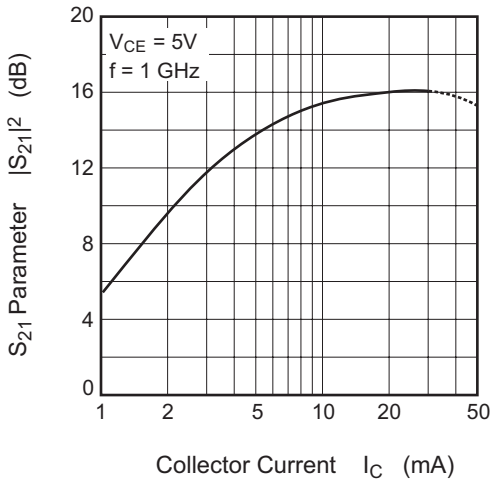
Power Gain vs. Collector Current



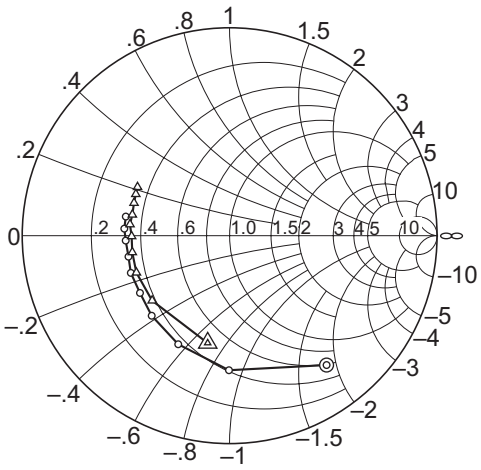
Noise Figure vs. Collector Current



S21 Parameter vs. Collector Current

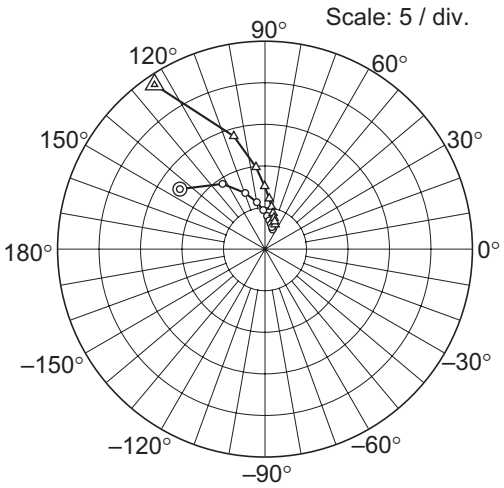


S11 Parameter vs. Frequency



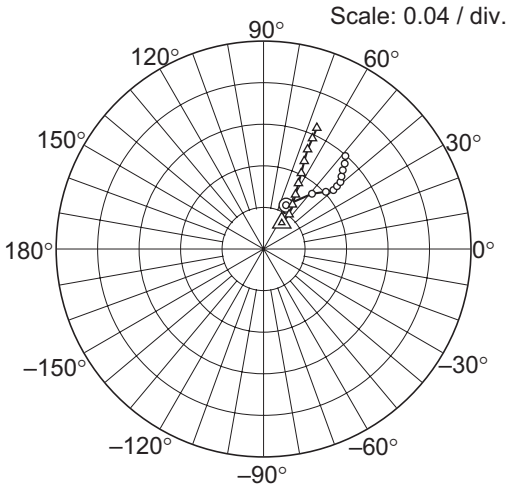
Condition: V_{CE} = 5 V , Zo = 50 Ω
200 to 2000 MHz (200 MHz step)
(I_C = 5 mA)
(I_C = 20 mA)

S21 Parameter vs. Frequency



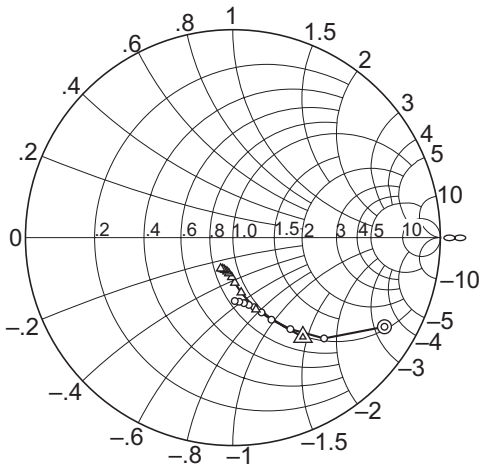
Condition: V_{CE} = 5 V , Zo = 50 Ω
200 to 2000 MHz (200 MHz step)
(I_C = 5 mA)
(I_C = 20 mA)

S12 Parameter vs. Frequency



Condition: V_{CE} = 5 V , Zo = 50 Ω
200 to 2000 MHz (200 MHz step)
(I_C = 5 mA)
(I_C = 20 mA)

S22 Parameter vs. Frequency



Condition: V_{CE} = 5 V , Zo = 50 Ω
200 to 2000 MHz (200 MHz step)
(I_C = 5 mA)
(I_C = 20 mA)

S Parameter

(V_{CE} = 5 V, I_C = 5 mA, Z_O = 50 Ω, Emitter common)

Freq.	S11		S21		S12		S22	
(MHz)	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
200	0.777	–53.1	12.52	144.9	0.0475	62.8	0.849	–30.4
400	0.647	–90.3	9.36	123.1	0.0708	48.7	0.655	–47.8
600	0.579	–115.4	7.16	109.4	0.0817	42.5	0.522	–57.8
800	0.538	–134.3	5.73	99.9	0.0880	40.1	0.438	–64.8
1000	0.513	–147.5	4.70	92.6	0.0933	40.5	0.386	–69.0
1200	0.508	–159.4	4.00	86.5	0.0980	41.0	0.350	–72.9
1400	0.500	–168.3	3.49	81.6	0.102	42.9	0.333	–76.6
1600	0.501	–177.3	3.09	76.8	0.108	44.8	0.319	–80.4
1800	0.508	176.2	2.78	72.5	0.113	46.4	0.310	–84.3
2000	0.510	169.6	2.53	68.7	0.119	48.6	0.305	–88.3

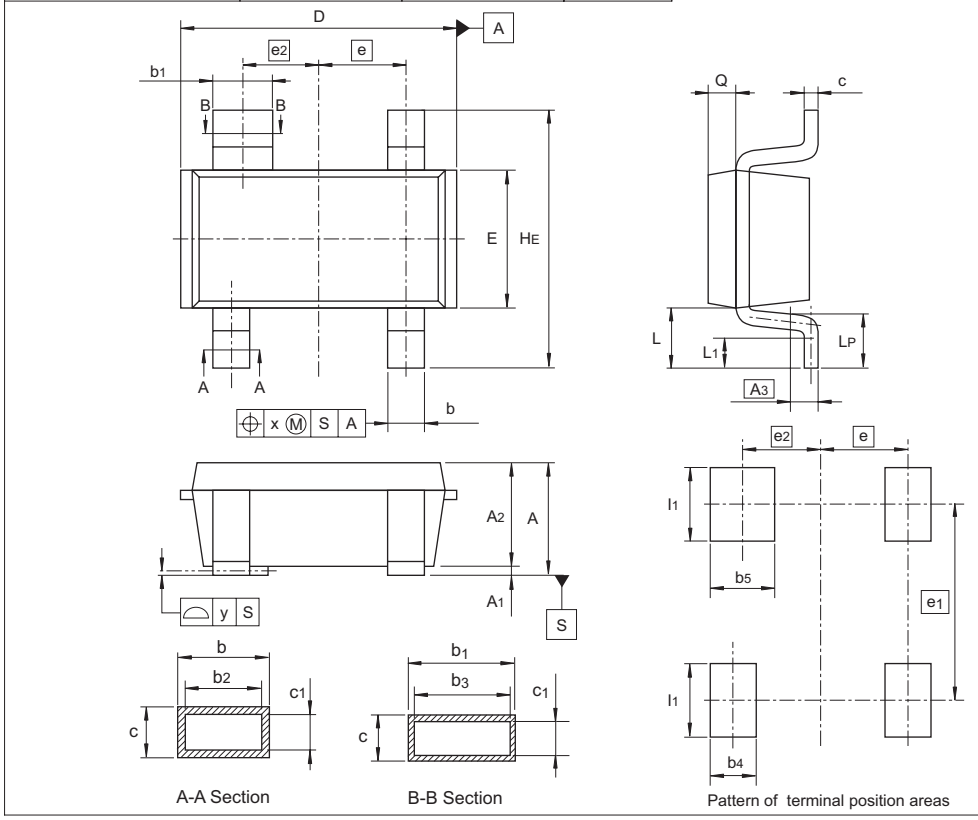
S Parameter

(V_{CE} = 5 V, I_C = 20 mA, Z_O = 50 Ω, Emitter common)

Freq.	S11		S21		S12		S22	
(MHz)	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
200	0.527	–101.6	23.79	124.0	0.0307	55.1	0.587	–54.9
400	0.488	–140.1	14.12	105.5	0.0413	53.4	0.363	–72.2
600	0.482	–158.4	9.89	96.3	0.0510	56.8	0.267	–81.4
800	0.478	–170.3	7.56	90.3	0.0606	59.5	0.218	–87.6
1000	0.474	–179.6	6.10	85.2	0.0716	62.0	0.191	–91.7
1200	0.484	173.6	5.14	81.2	0.0817	63.5	0.174	–96.5
1400	0.481	167.9	4.44	77.4	0.0931	65.1	0.166	–100.0
1600	0.486	161.2	3.92	74.0	0.105	66.1	0.161	–104.4
1800	0.496	156.2	3.52	70.7	0.117	66.1	0.159	–107.9
2000	0.502	152.3	3.20	67.7	0.127	66.2	0.161	–111.9

Package Dimensions

JEITA Package Code	RENESAS Code	Package Name	MASS[Typ.]
SC-61AA	PLSP0004ZA-A	MPAK-4 / MPAK-4V	0.013g



Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
A	1.0	—	1.3
A_1	0	—	0.1
A_2	1.0	1.1	1.2
A_3	—	0.25	—
b	0.35	0.42	0.5
b_1	0.55	0.62	0.7
b_2	—	0.4	—
b_3	—	0.6	—
c	0.1	0.13	0.15
c_1	—	0.11	—
D	2.7	—	3.1
E	1.35	1.5	1.65
e	—	0.95	—
e_2	—	0.85	—
H_E	2.2	2.8	3.0
L	0.35	—	0.75
L_1	0.15	—	0.55
L_P	0.25	—	0.65
x	—	—	0.05
y	—	—	0.05
b_4	—	—	0.55
b_5	—	—	0.75
e_1	—	1.95	—
I_1	—	—	1.05
Q	—	0.3	—

Ordering Information

Part Name	Quantity	Shipping Container
2SC4926YD-TL-E	3000	ϕ 178 mm Reel, 8 mm Emboss Taping

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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